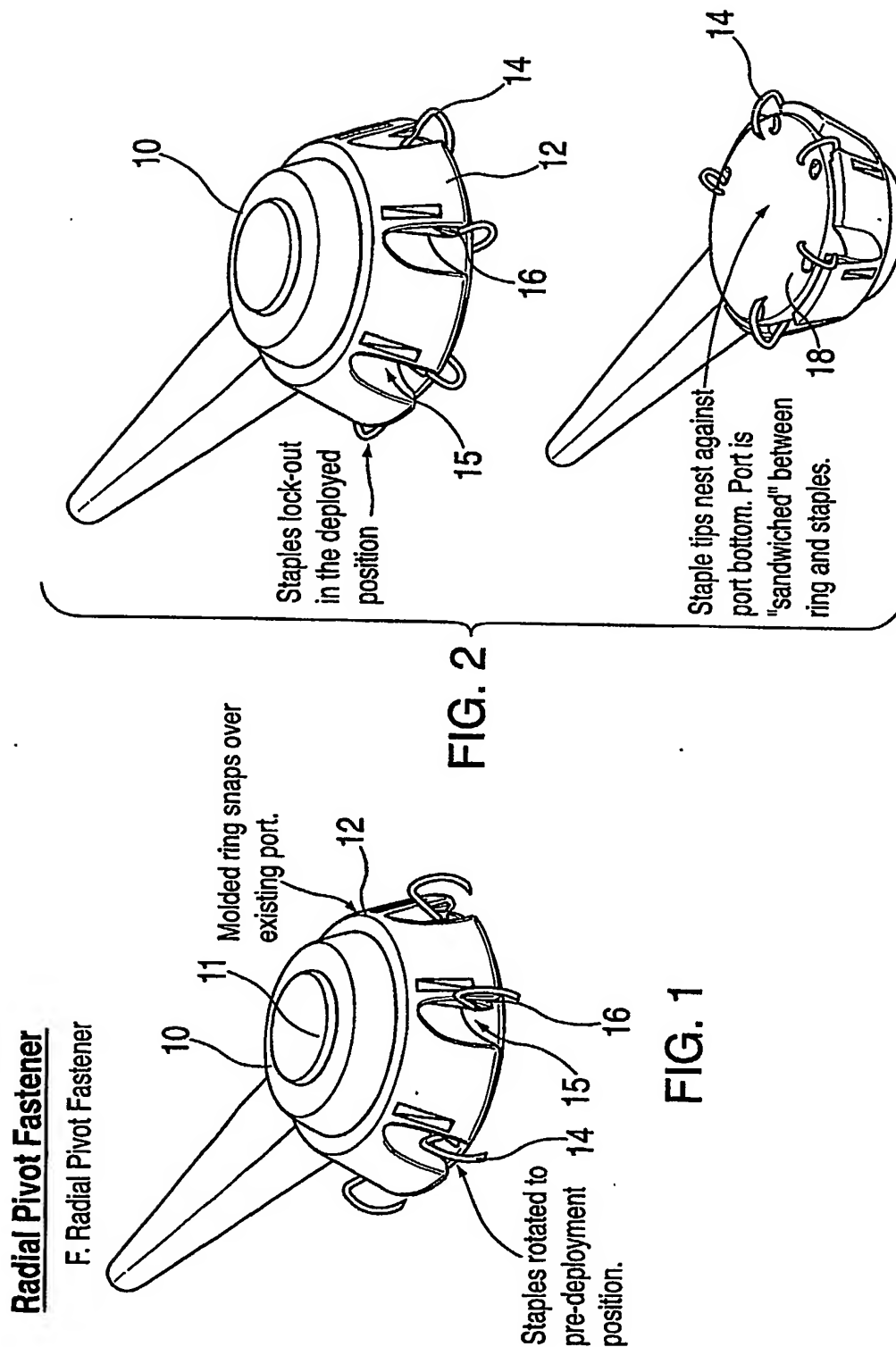


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Radial Pivot Fastener (detail)

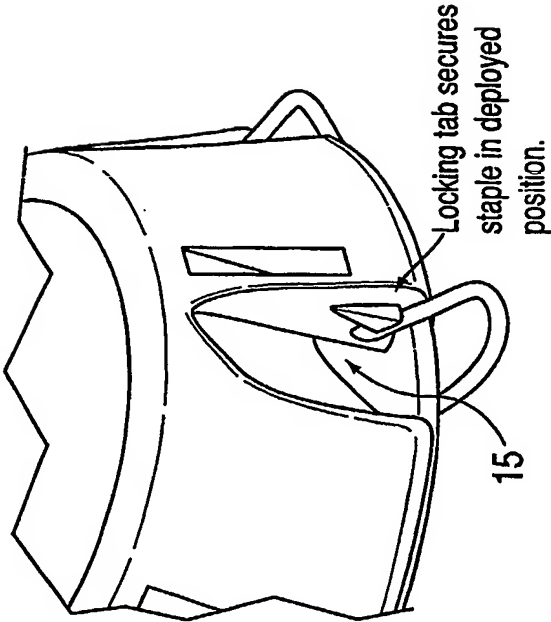


FIG. 4

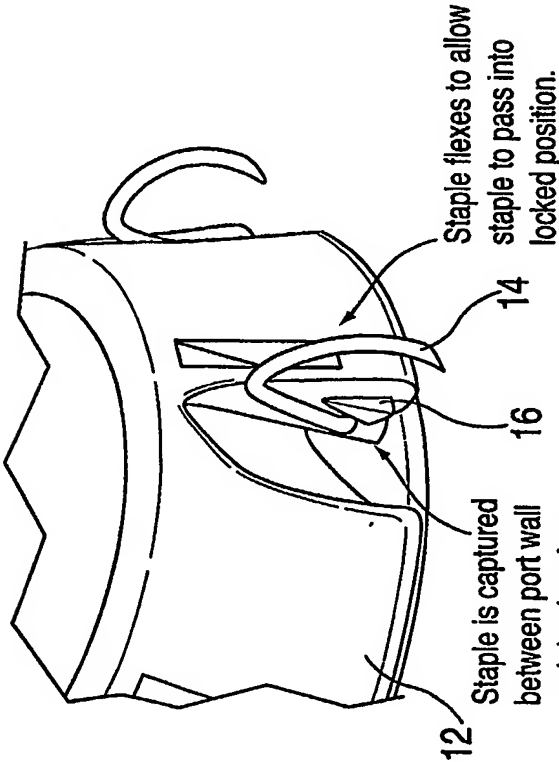
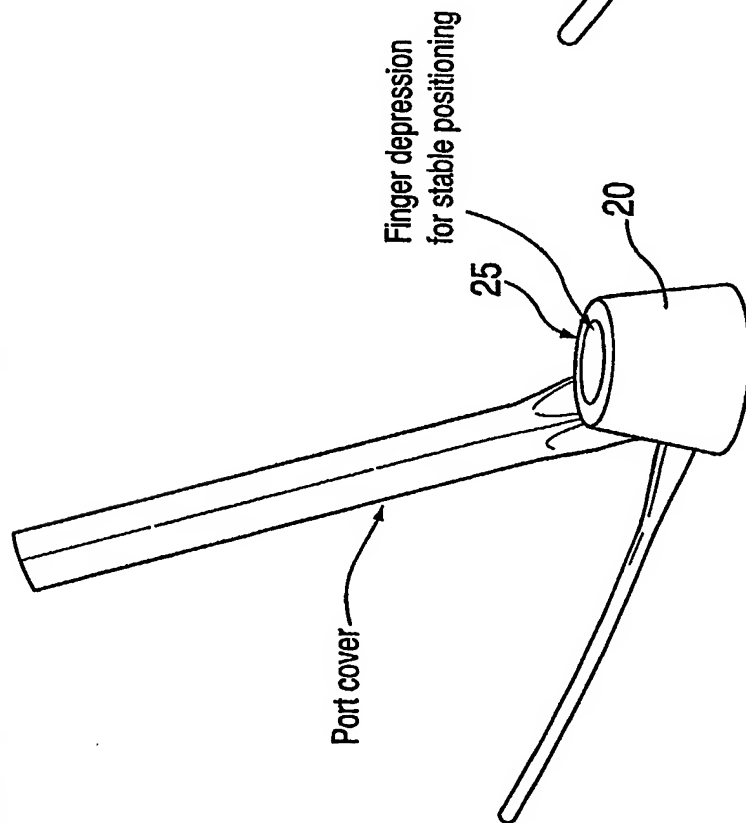


FIG. 3

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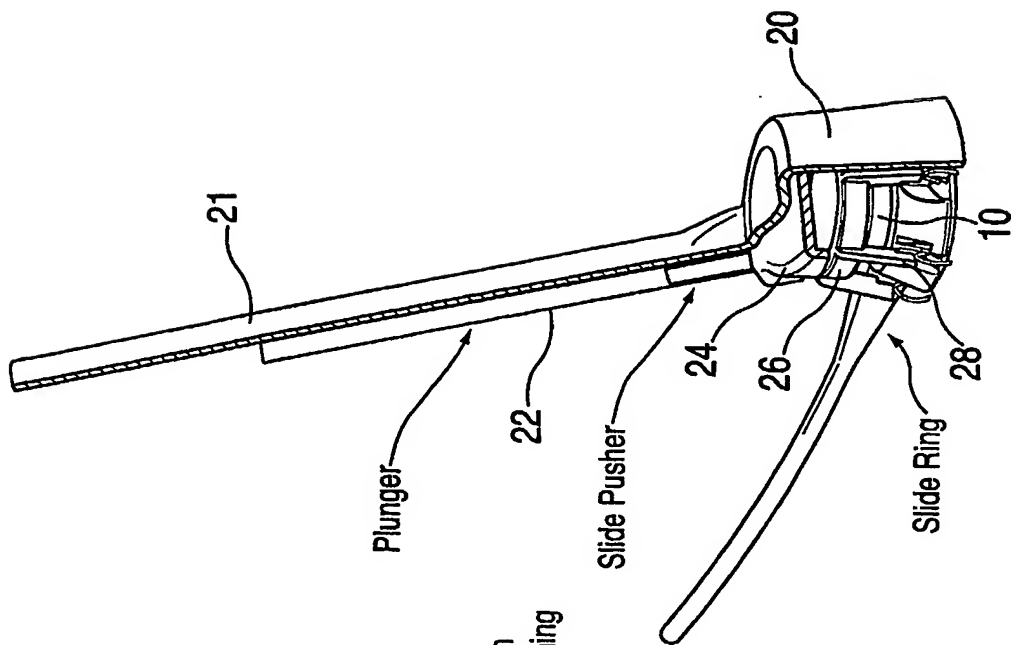
Port Delivery System (Distal End)



**FIG. 5**

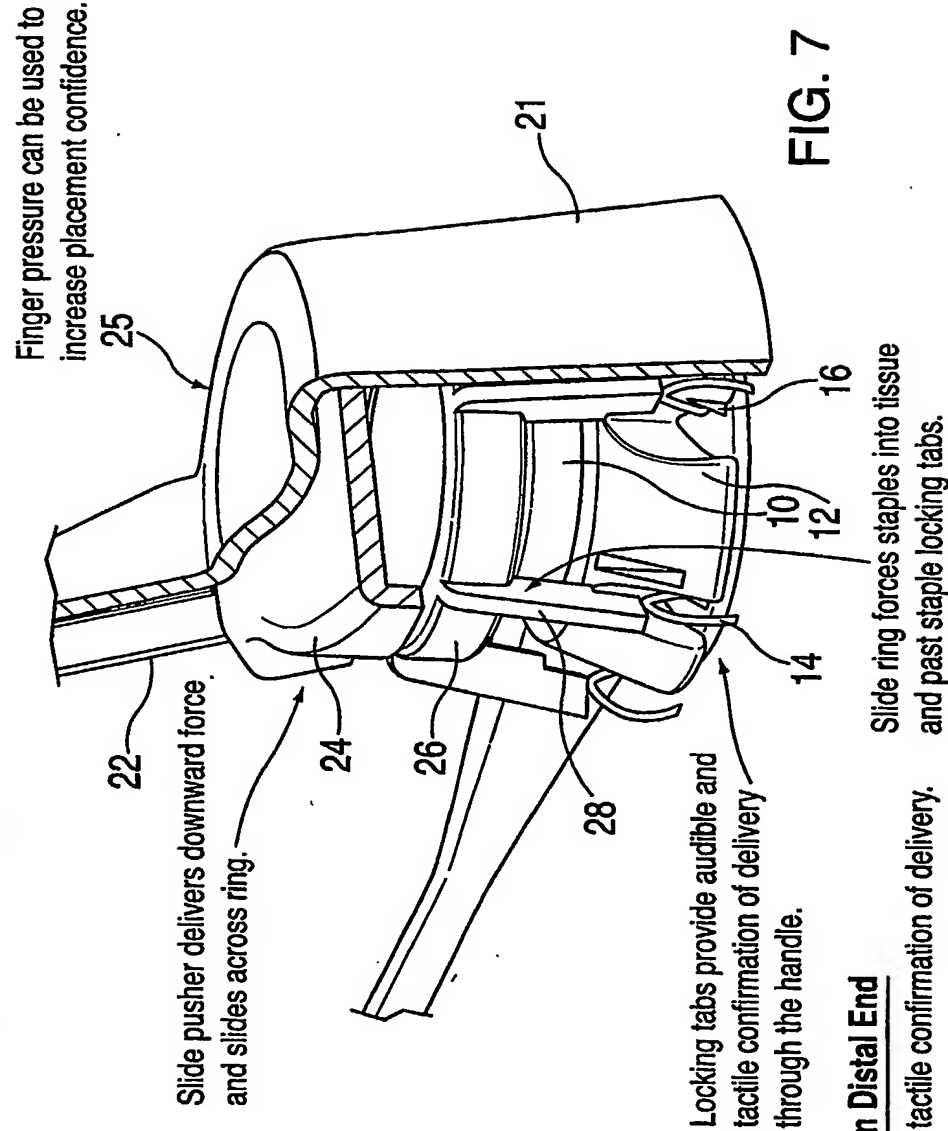
Delivery System Distal End

- Holds port in delivery location.
- Allows for tactile positioning.
- Deployment instantaneous or controlled by surgeon.



**FIG. 6**

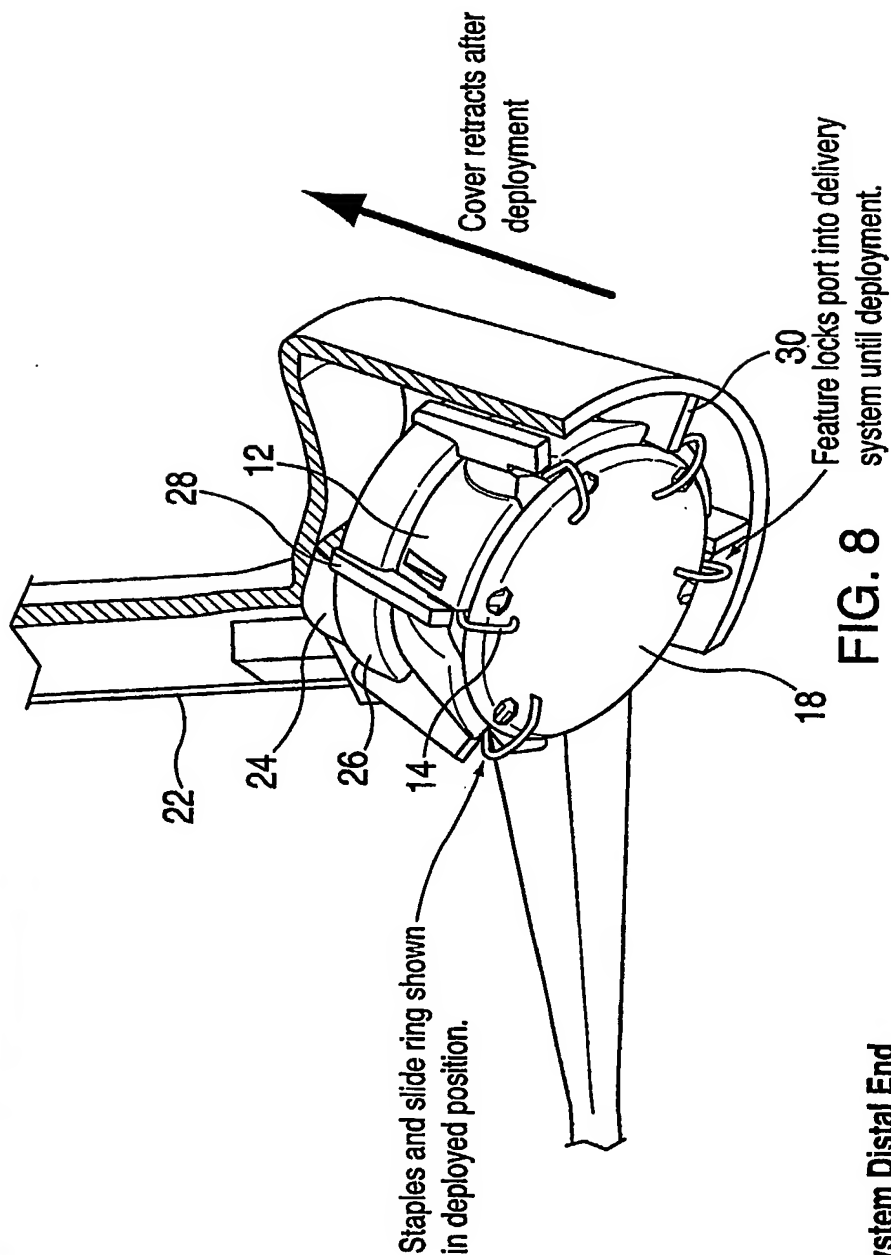
**Port Delivery System (Distal End)**



**Delivery System Distal End**

- Audible and tactile confirmation of delivery.

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**Port Delivery System (Distal End)**

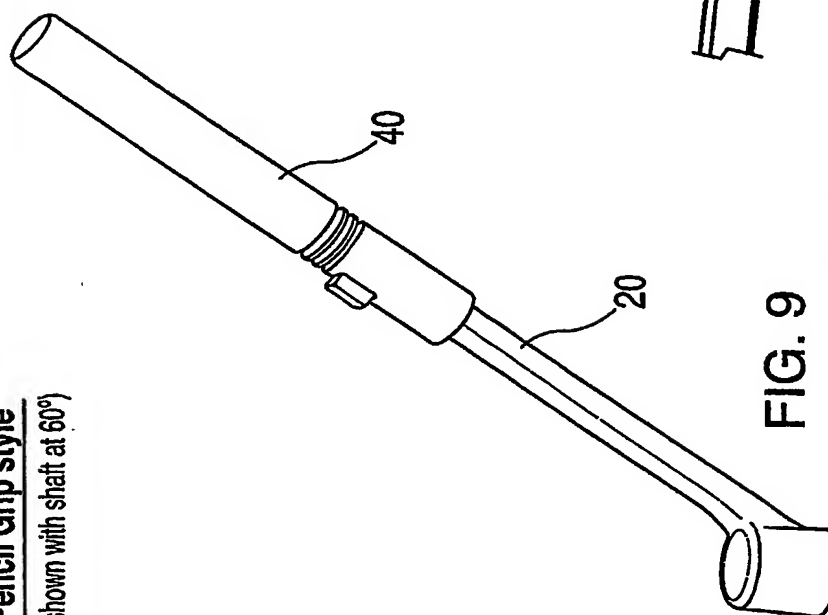
**Delivery System Distal End**

- Cover captures port until deployment complete
- Port released after deployment

# **Port Delivery System (handle configurations)**

## **Pencil Grip style**

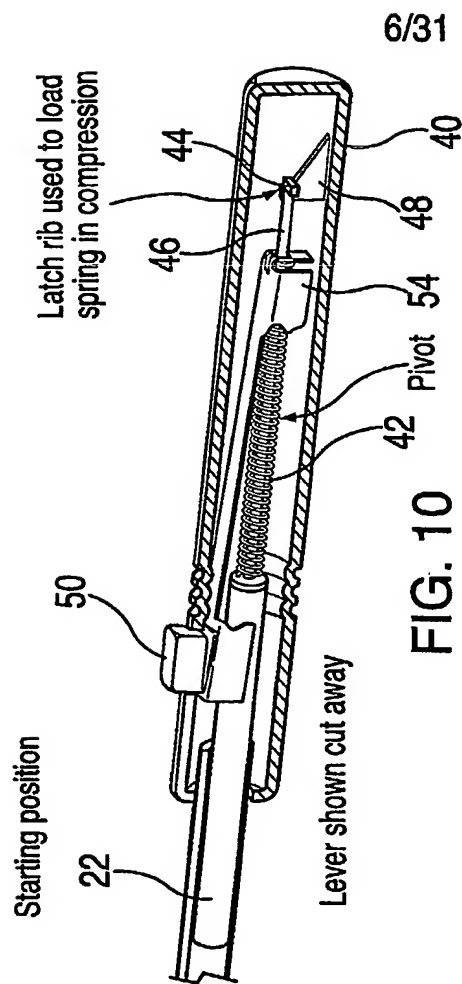
(shown with shaft at 60°)



**FIG. 9**

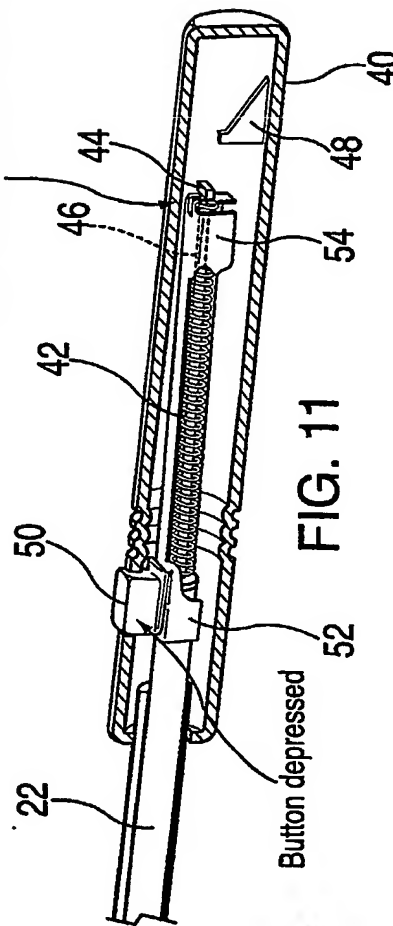
## **Simple Button/Trigger Release mechanism**

- Produces ~ 0.250 - 0.750" rod travel (depends on force requirement)
- Deployment instantaneous, high impact speed



**FIG. 10**

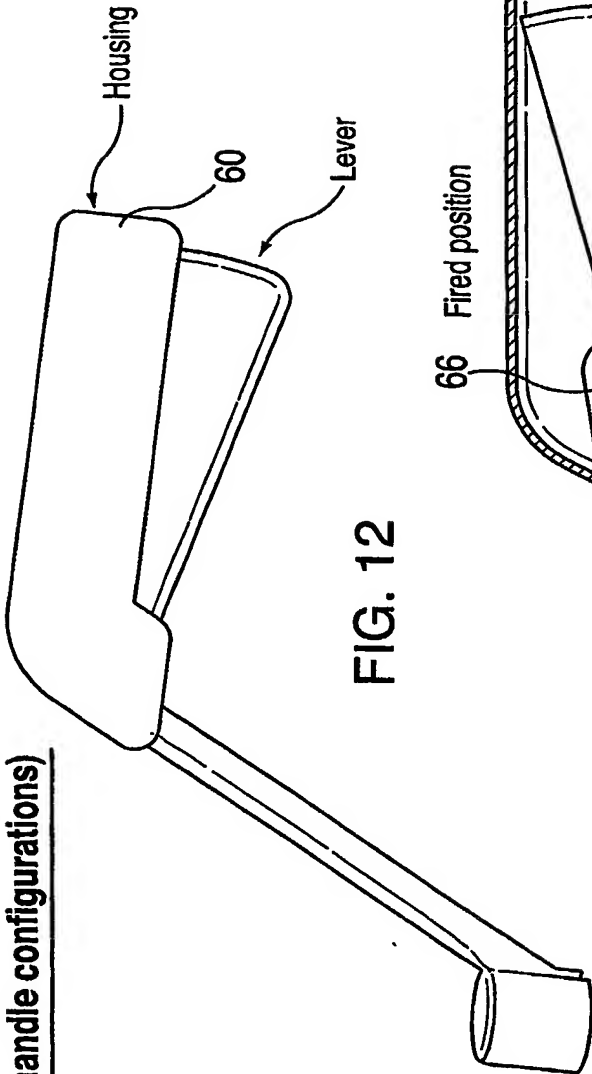
Upon rotation, rod dislodged from latch rib and allowed to advance



**FIG. 11**

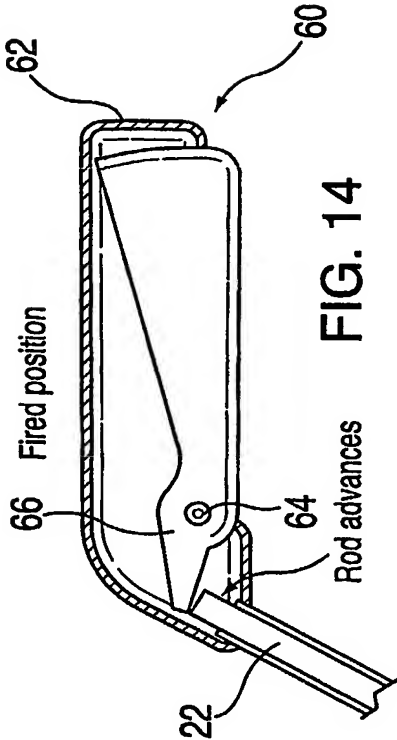
**Port Delivery System (handle configurations)**

**Palm Grip style**  
(shown with shaft at 60°)

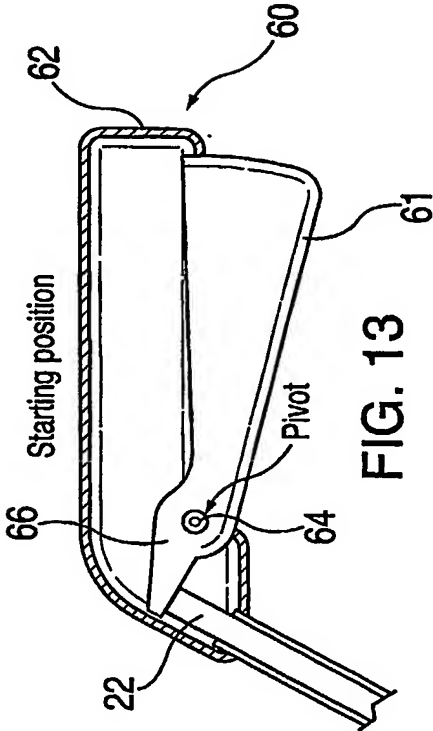


**FIG. 12**

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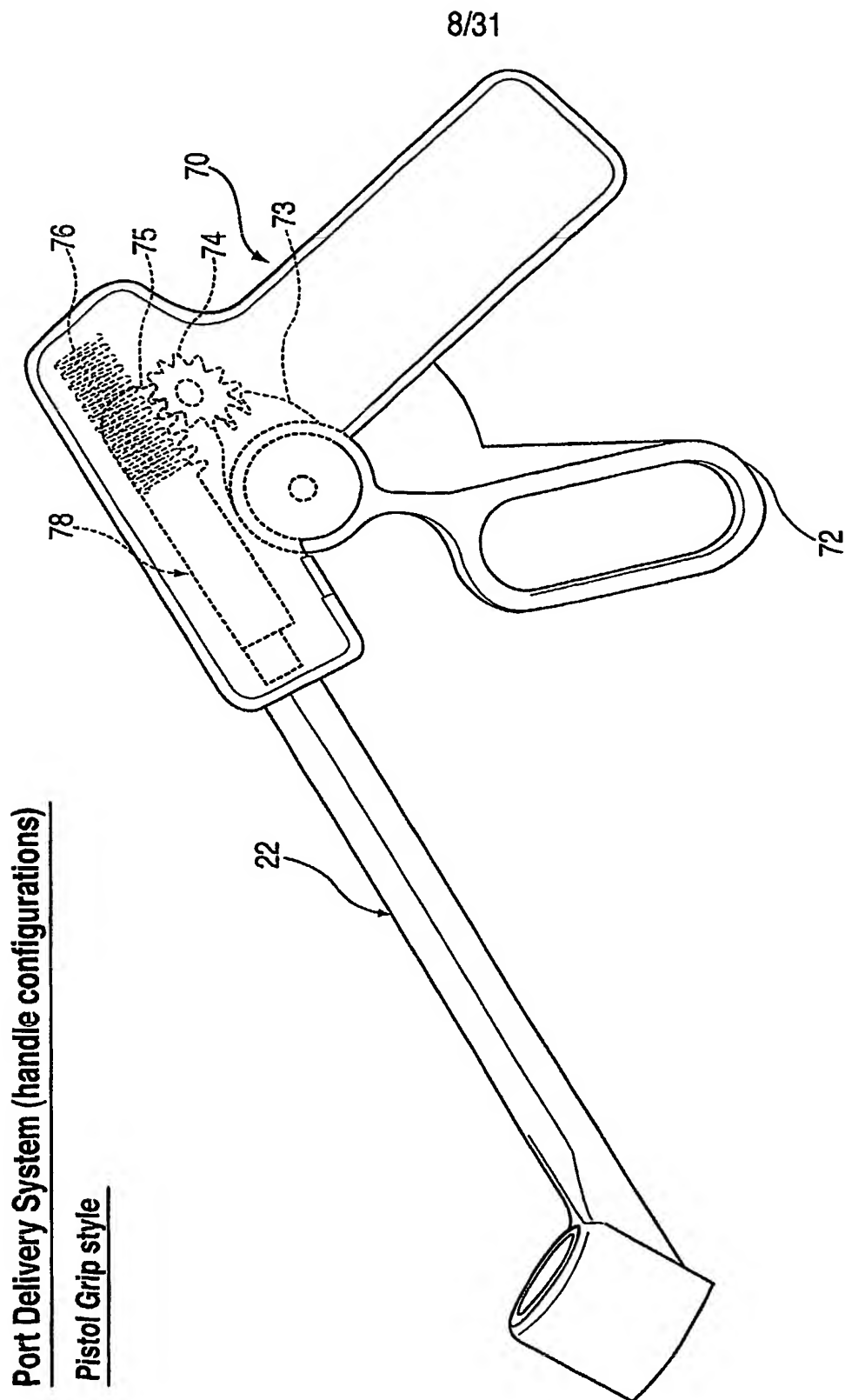
**FIG. 14**



**FIG. 13**

**Lever mechanism**

- Produces ~ 0.250" rod travel
- Can produce in excess of 50lb. force on rod (depends on force requirement)
- Deployment speed controlled by operator





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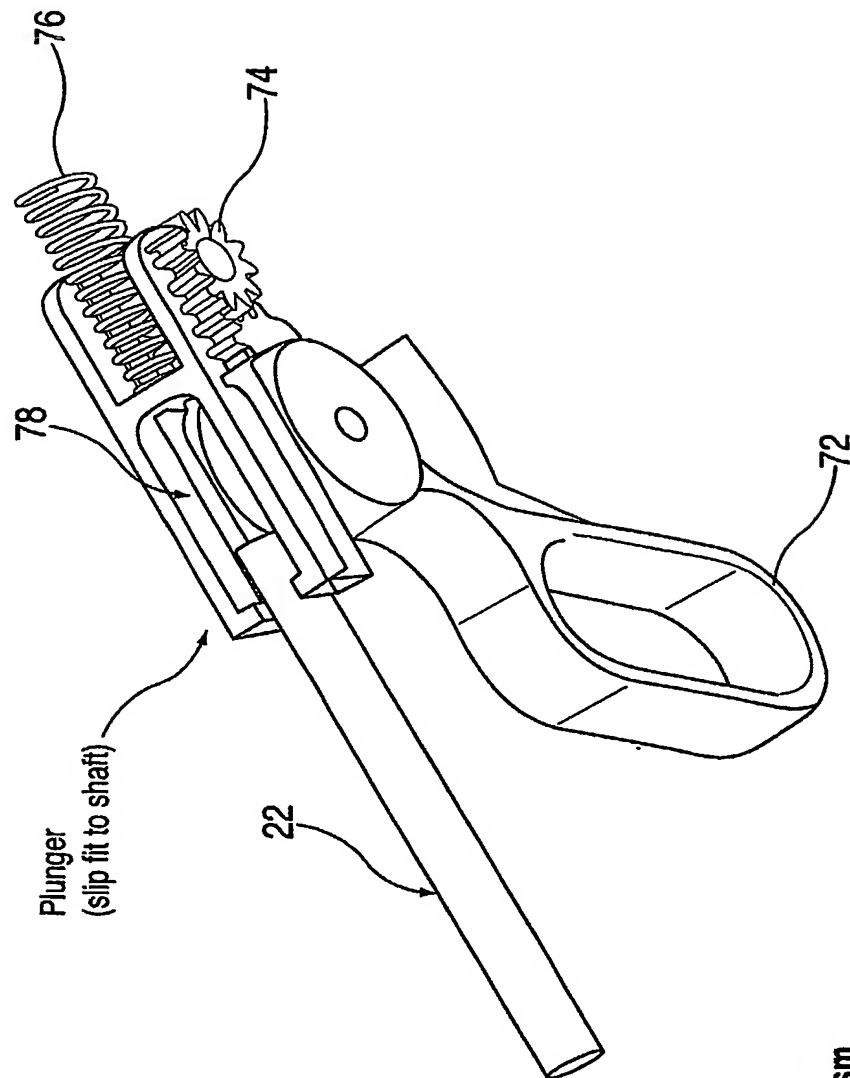
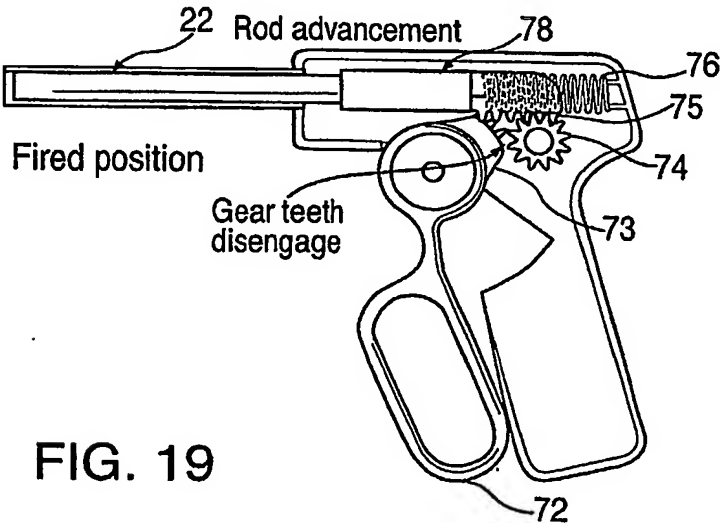
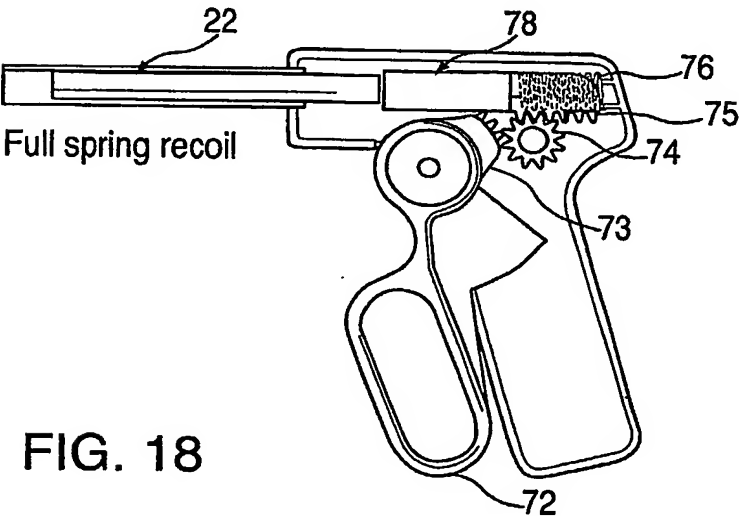
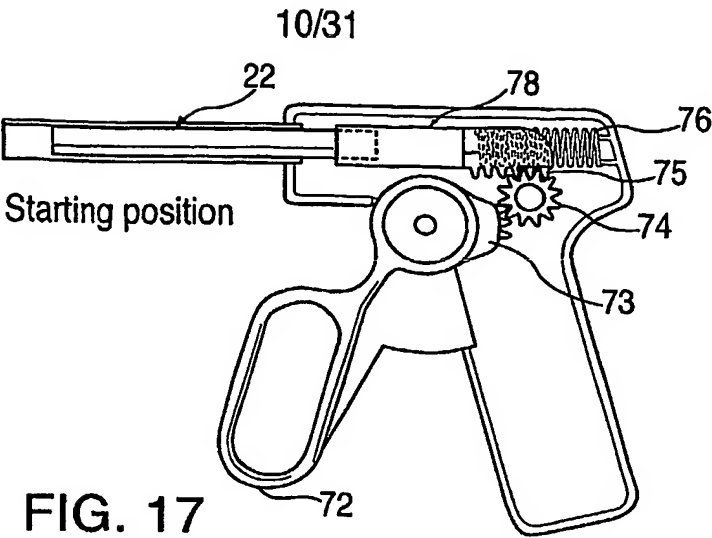


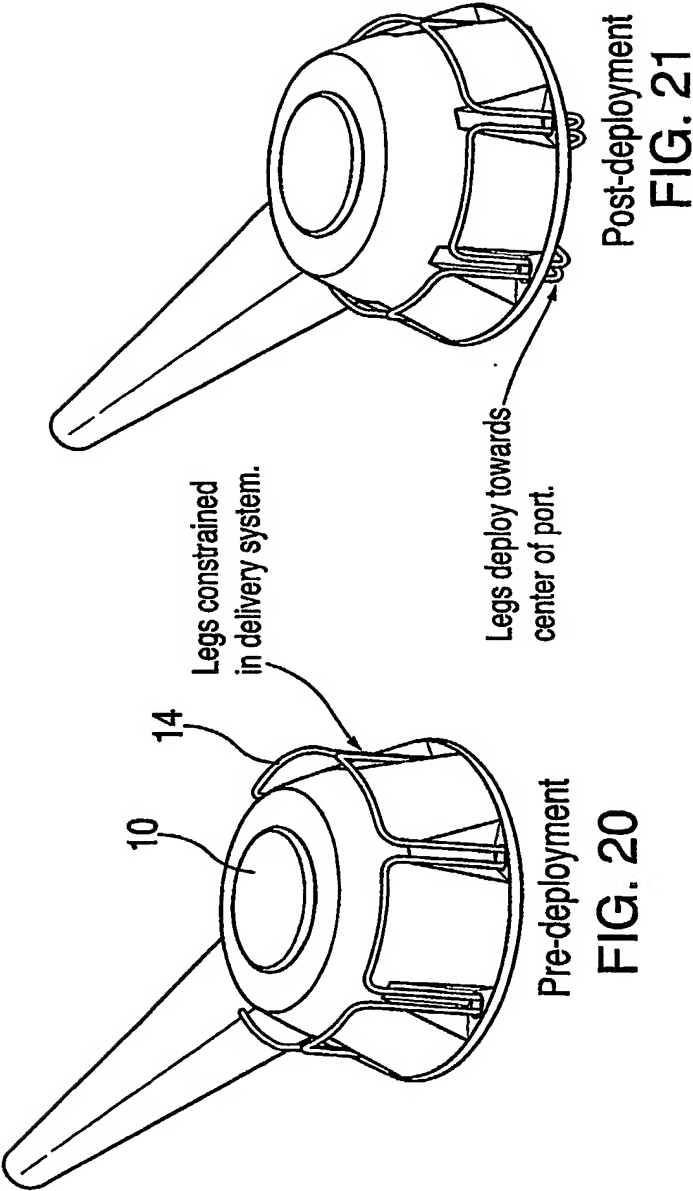
FIG. 16

Gear train mechanism

- Produces ~ 0.400" rod travel
- Can produce ~ 50lb. force on rod
- Deployment instantaneous, very high impact speed



Continuous NiTi Wire Form



**Continuous Wire Form** Possible fastener leg configurations

A1. Continuous Wire Form: Straight Leg Blunt Tips

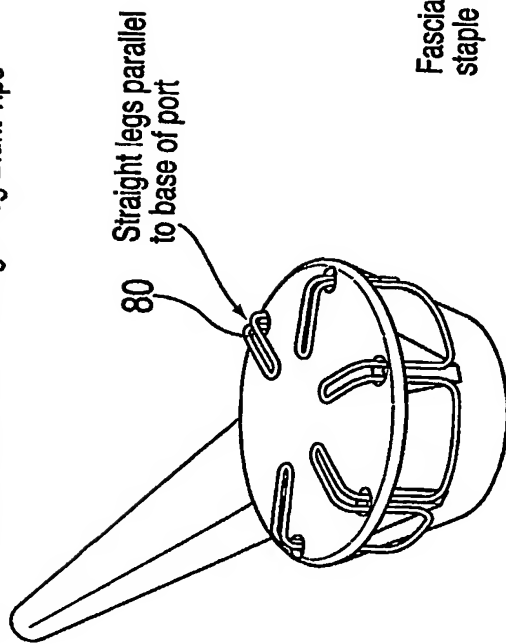


FIG. 22

A2. Continuous Wire Form: Curved Leg, Blunt Tips

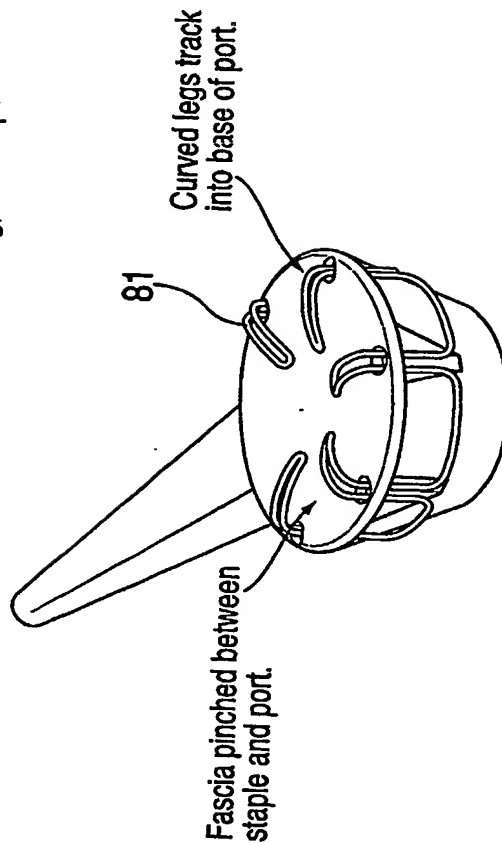


FIG. 23

Continuous Wire Form    Possible fastener leg configurations

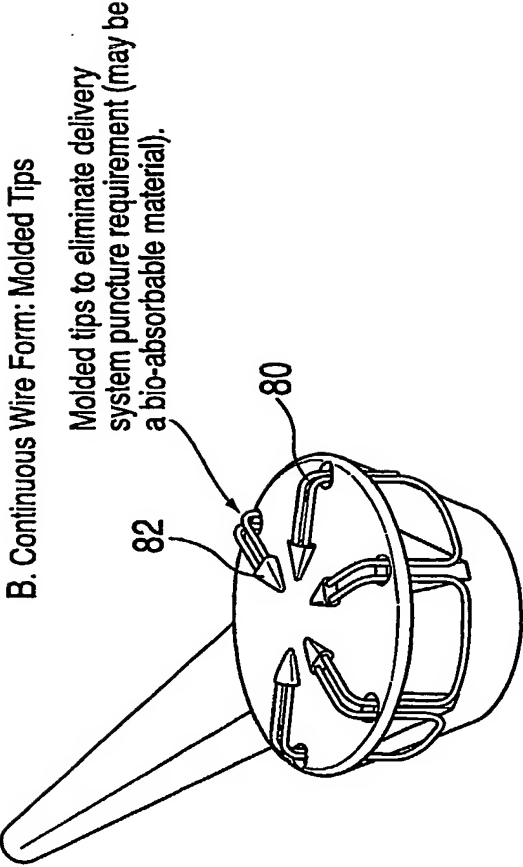
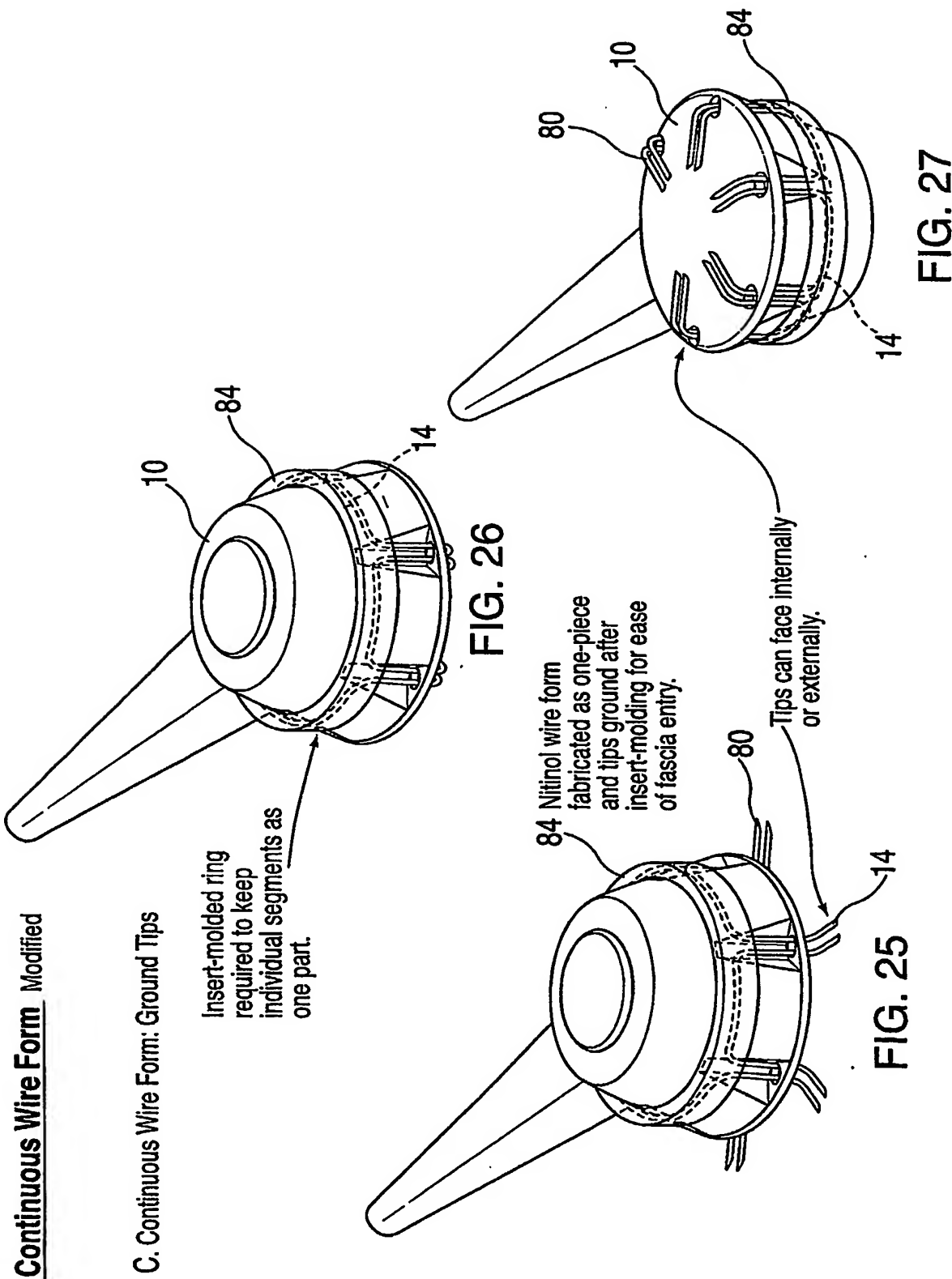


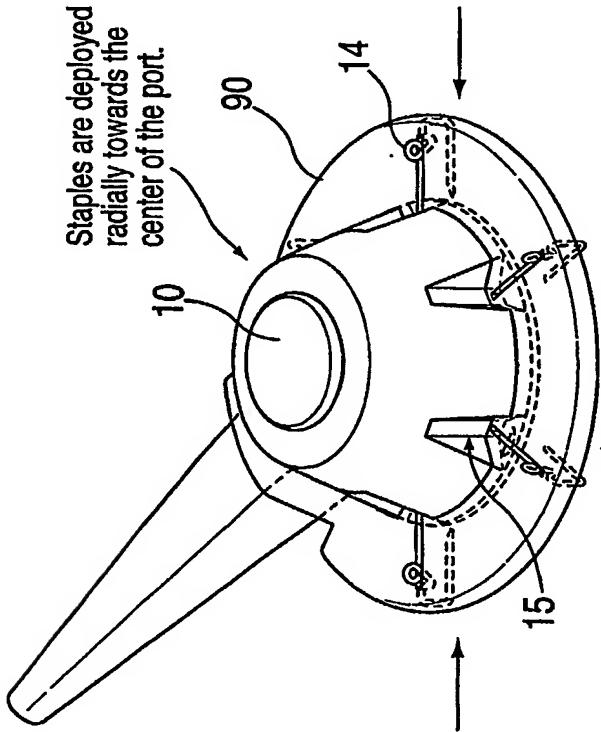
FIG. 24

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**Radial Slide Fastener**

**D. Radial Slide Fastener: Straight Legs**

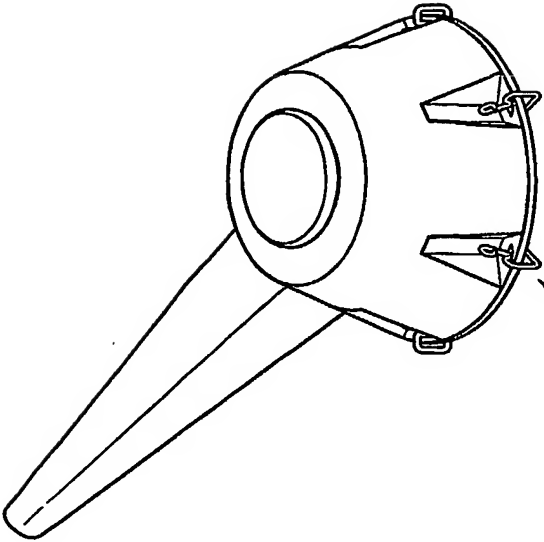


Staples are deployed radially towards the center of the port.

**FIG. 28**

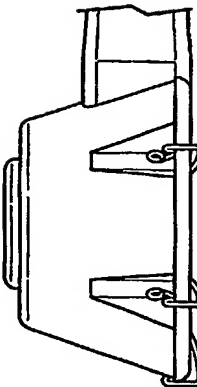
Molded staple guide can be part of delivery system or permanent part of port to keep system as one part.

**FIG. 29**



Staple snaps in place in suture holes.

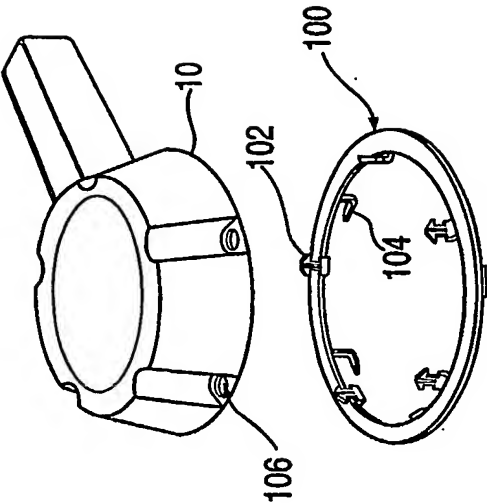
**E. Radial Slide Fastener: Curved Legs**



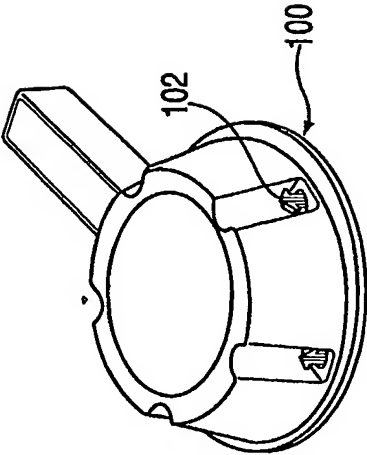
Optional curved staple will rest tip against bottom of port and guide the fastener through the fascia.

**FIG. 30**

Two Part Fastening System: Concept 2



**FIG. 31**  
Pre-Installation

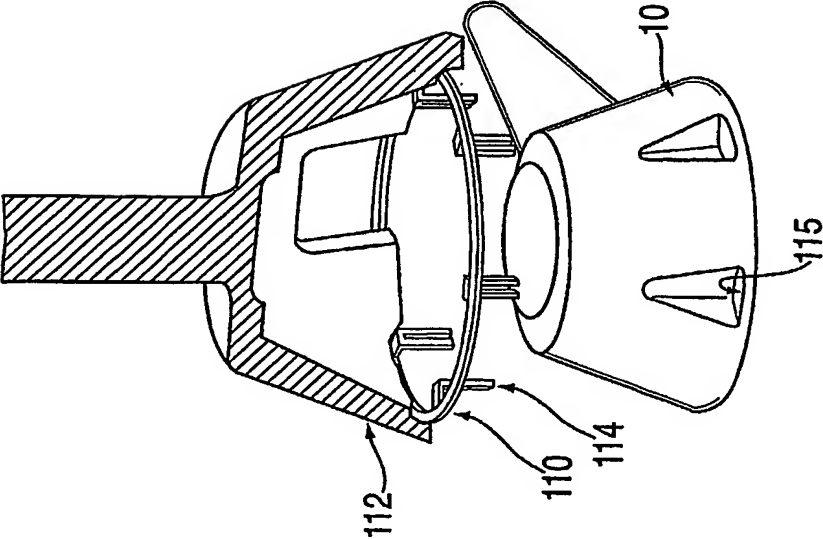


**FIG. 32**  
Post-Installation

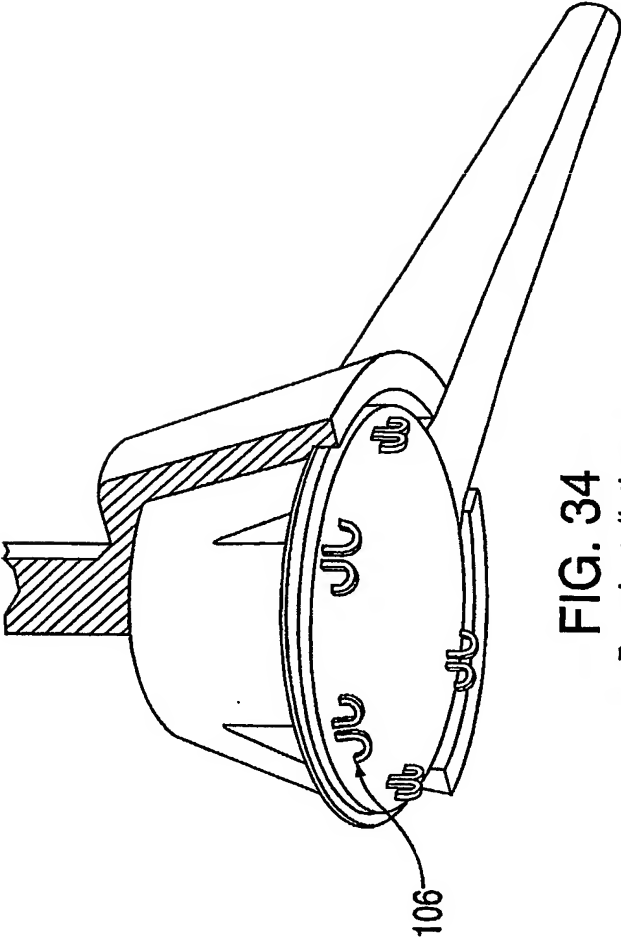


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Two Part Fastening System: Concept 1



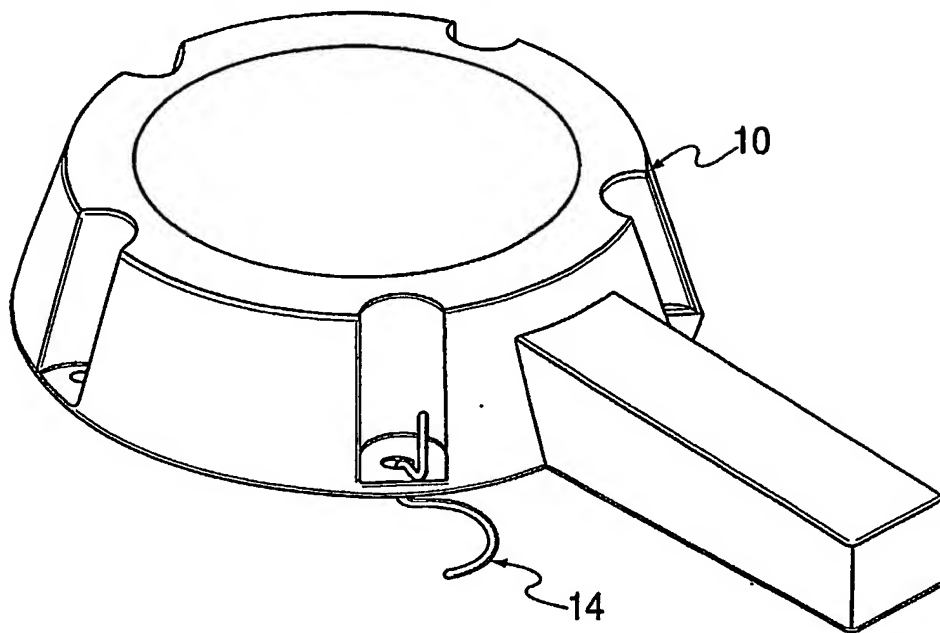
**FIG. 33**  
Pre-Installation



**FIG. 34**  
Post-Installation

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**Stand Alone Fastener: Concept 1**



**FIG. 35**

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Stand Alone Fastener: Concept 2

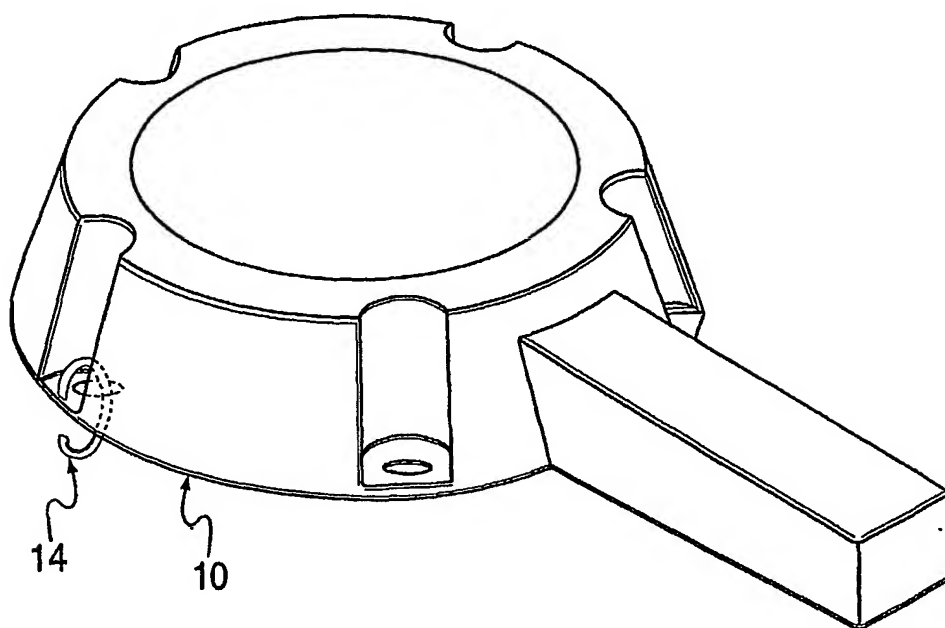


FIG. 36

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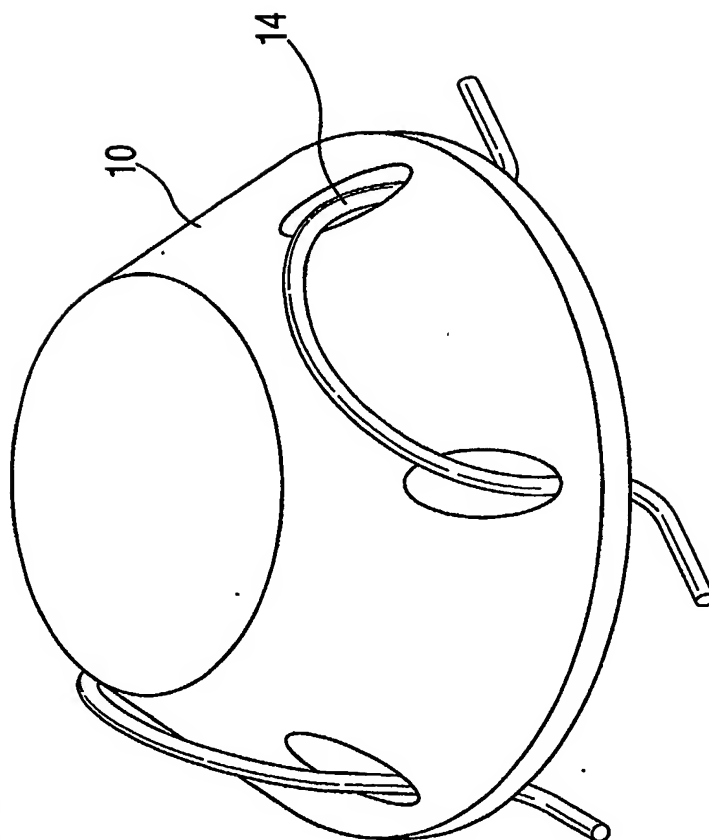
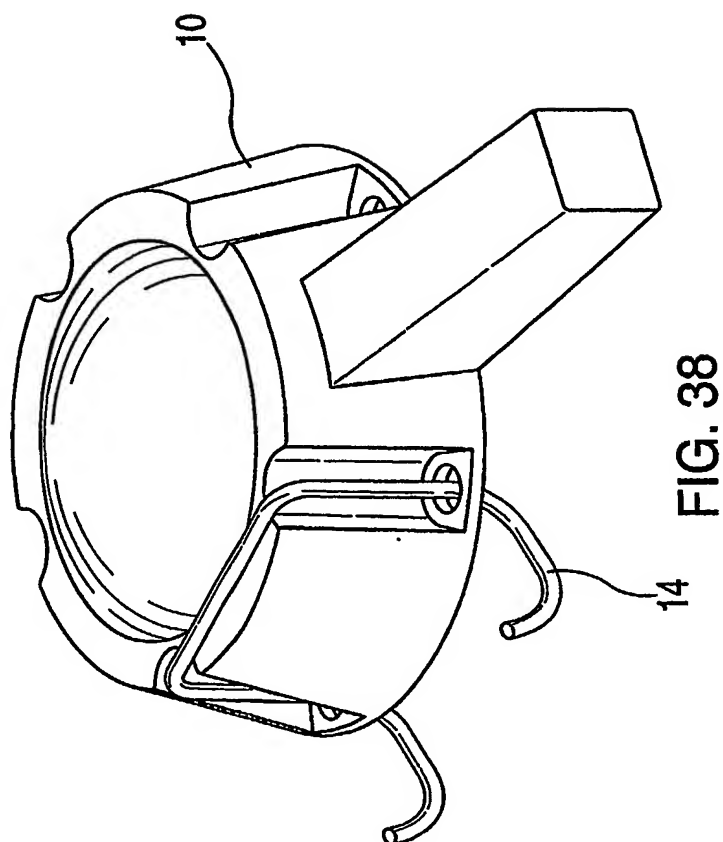


FIG. 37

Stand Alone Fastener: Concept 3

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Stand Alone Fastener: Concept 4



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Injection Port Incorporated System

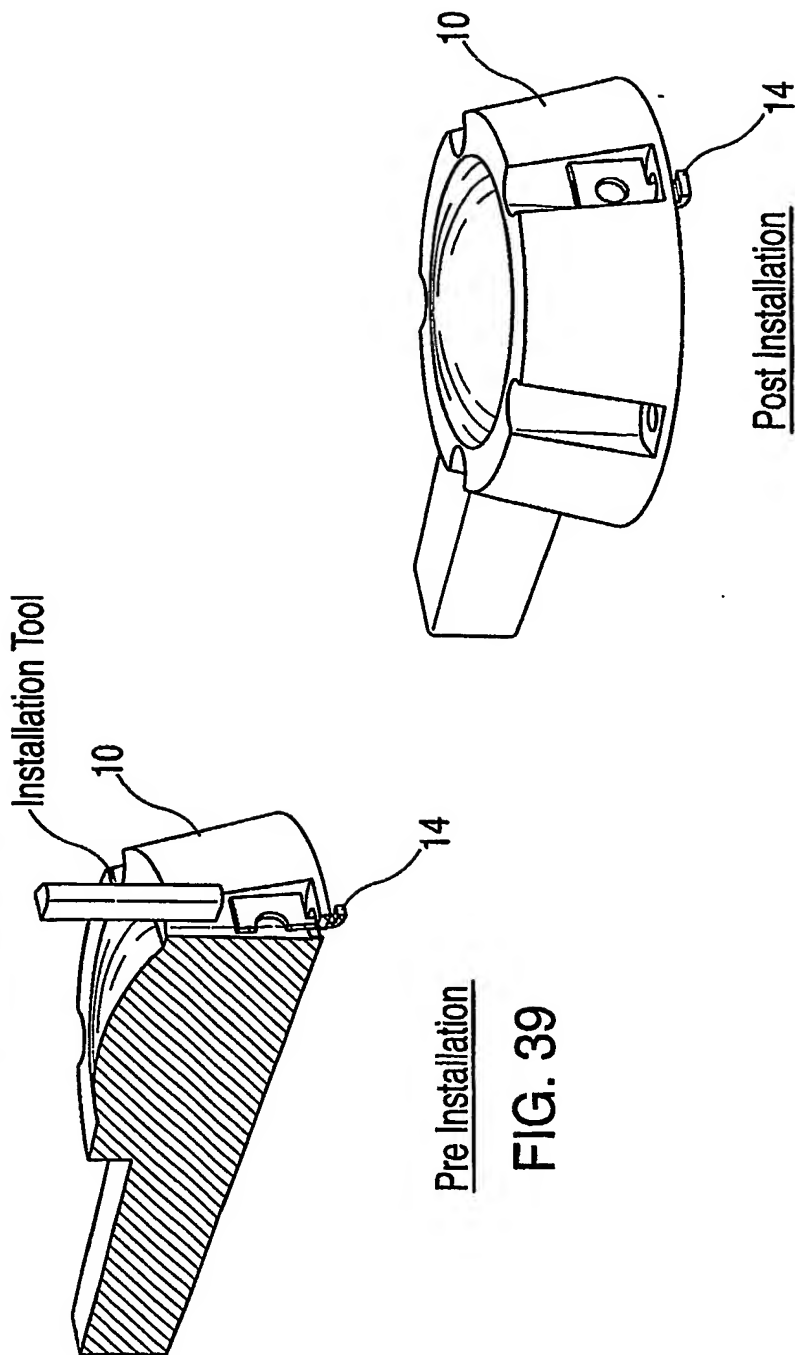


FIG. 39

FIG. 40

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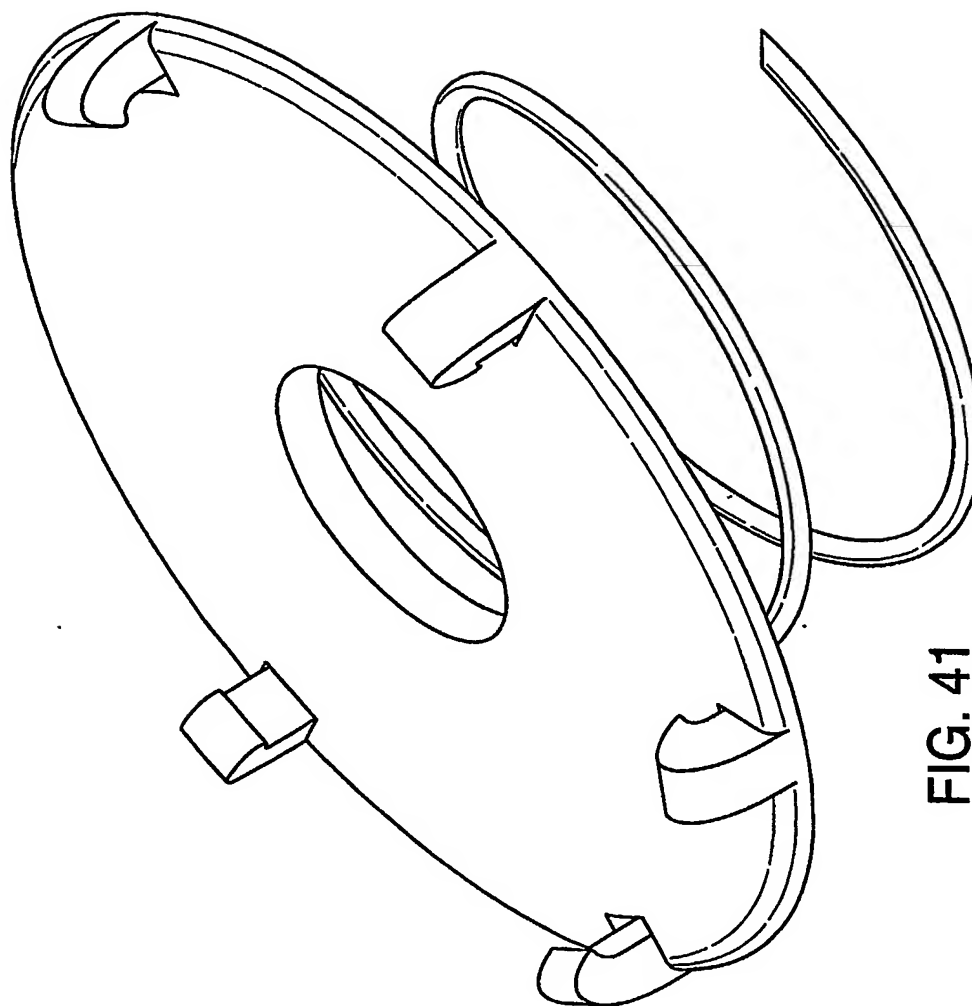


FIG. 41

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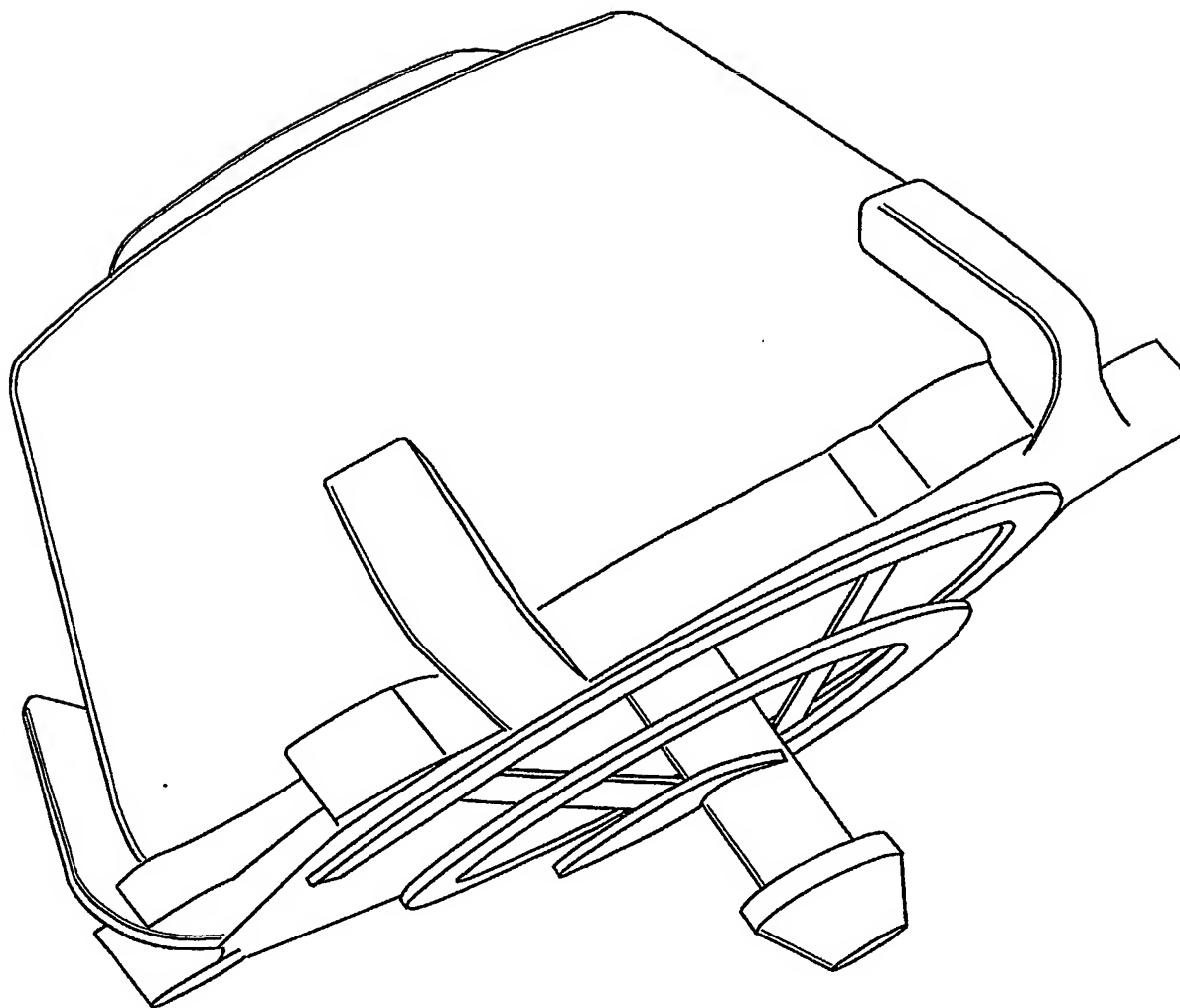


FIG. 42



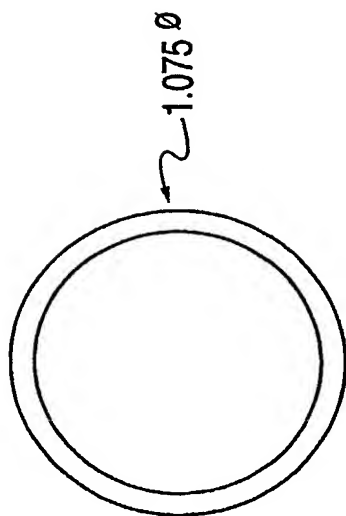


FIG. 43

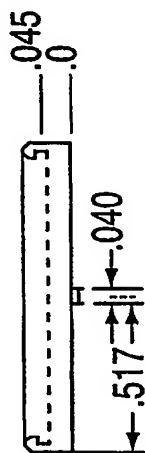


FIG. 44

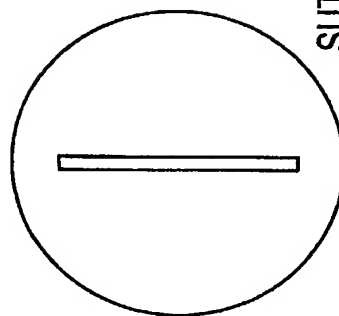


FIG. 45

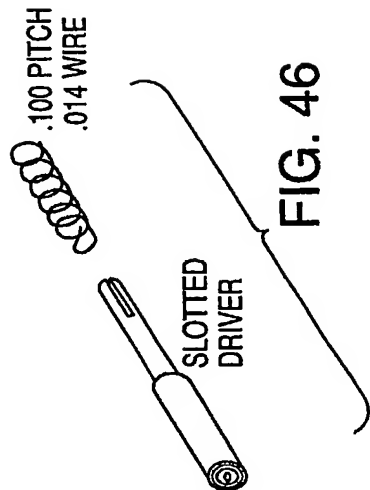


FIG. 46

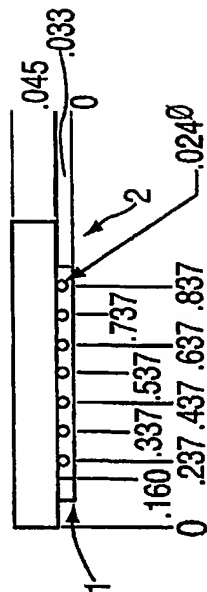
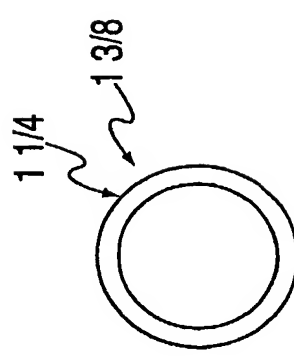


FIG. 47

NOTES:

1. Should have solid stop.
2. Could have latch by having driver end of spring catch on underside of base.



Should be:  
hole at either end of slot  
Note:  
use .201 $\phi$  mandrel for  
curved hooks

FIG. 48

FIG. 51

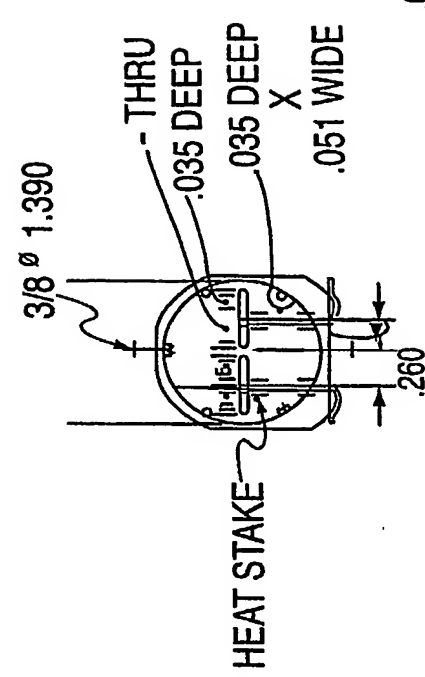
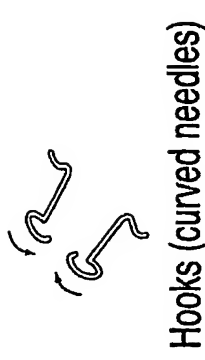


FIG. 49

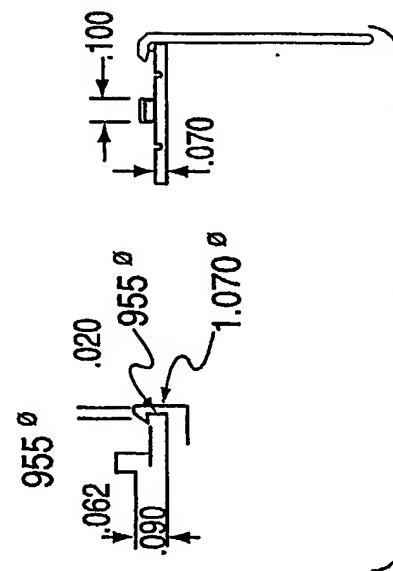


FIG. 50

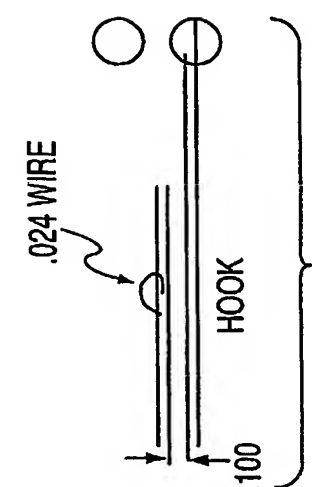


FIG. 52

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PORT FIXATION PROTO # 7

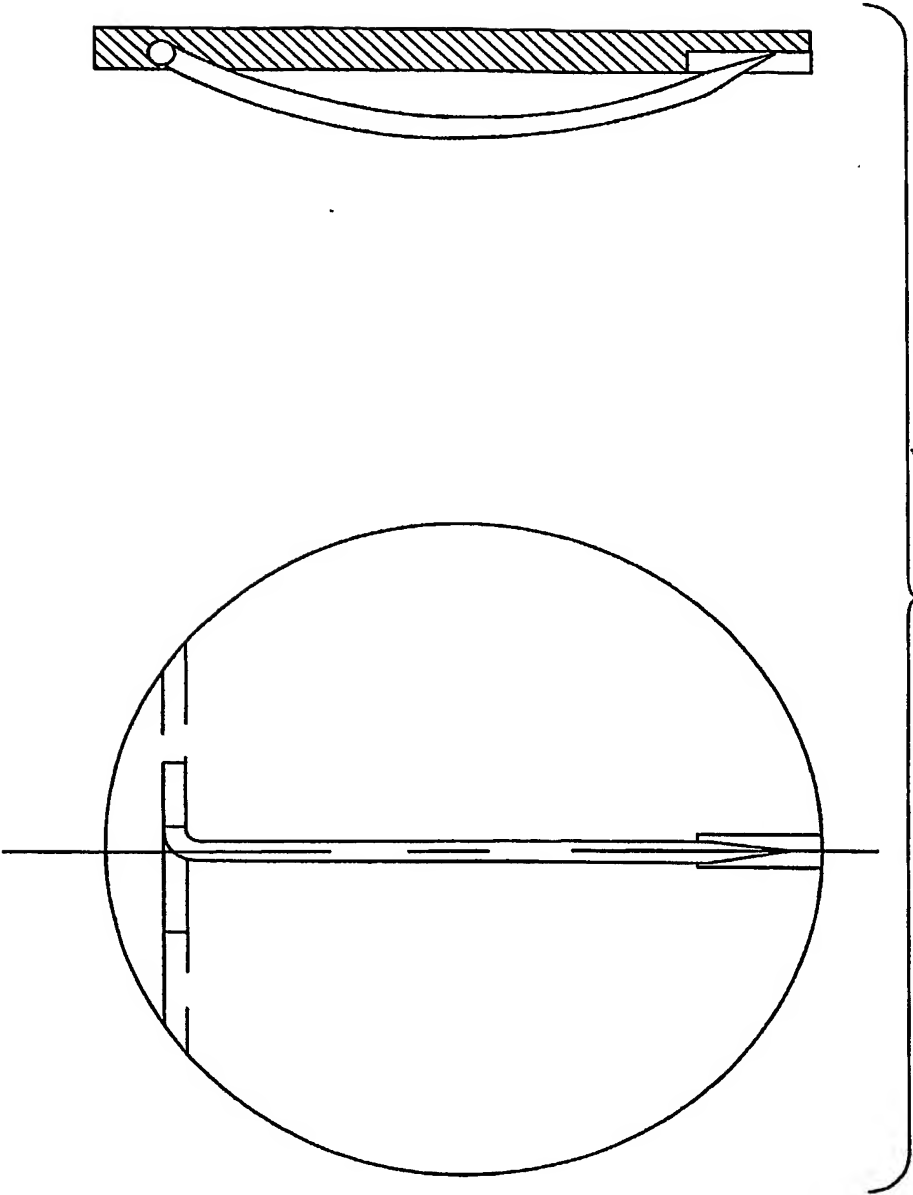


FIG. 53

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PORT FIXATION PROTO # 8

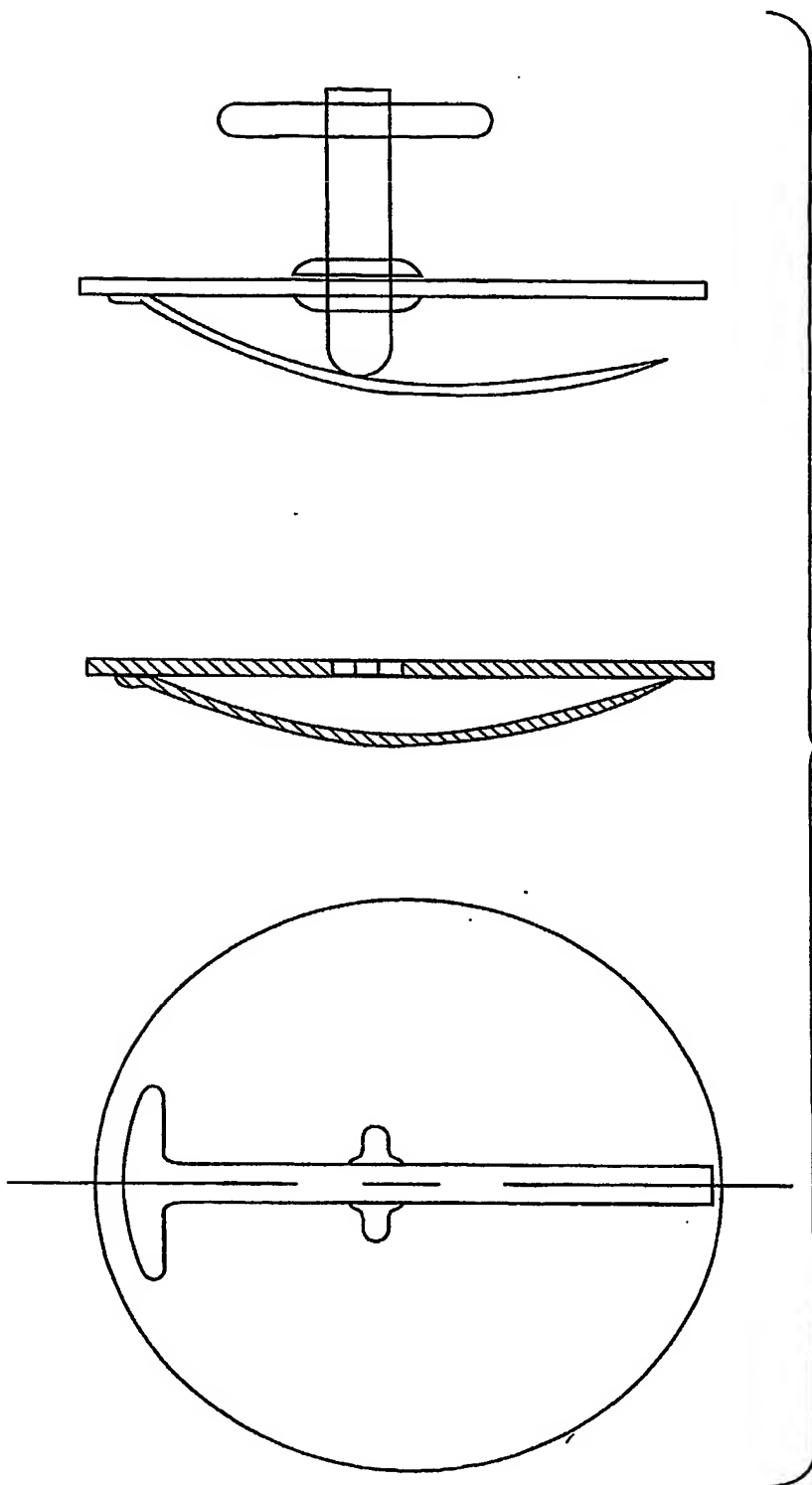


FIG. 54

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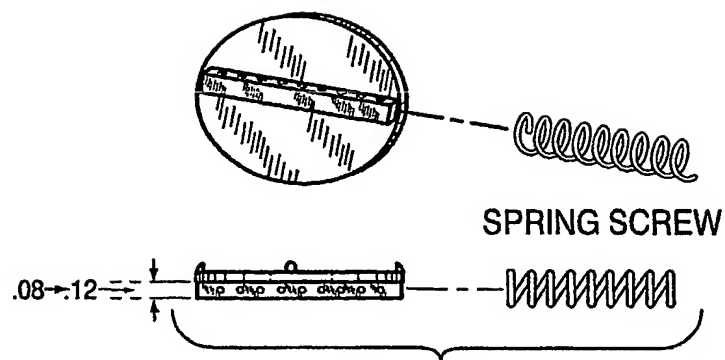


FIG. 55

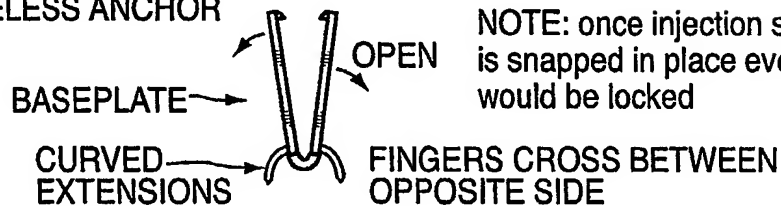
INJECTION SIGHT  
SUTRELESS ANCHOR

FIG. 56

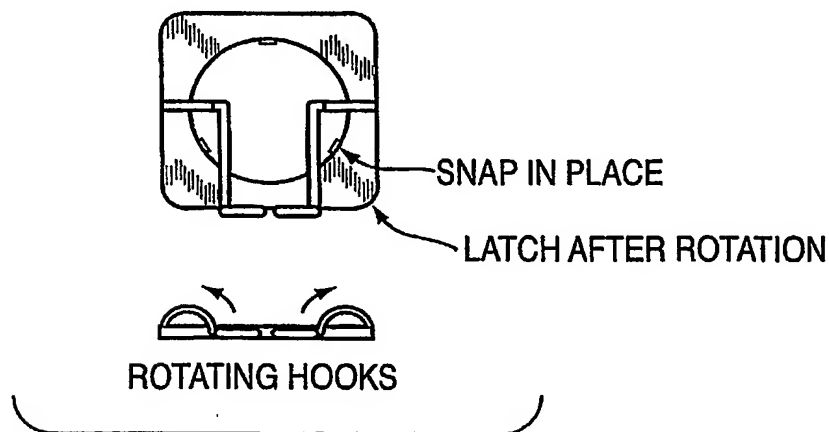
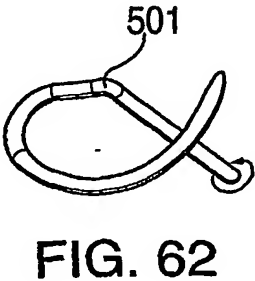
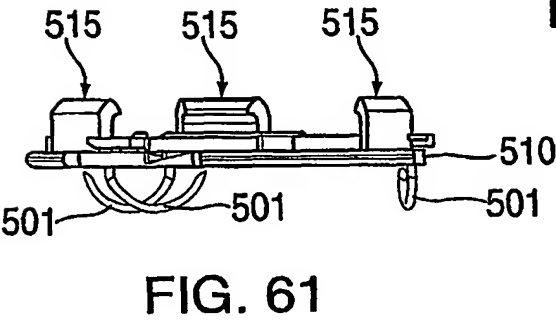
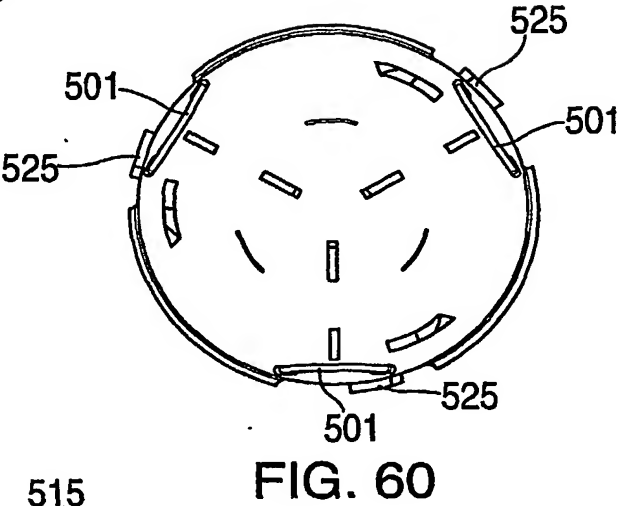
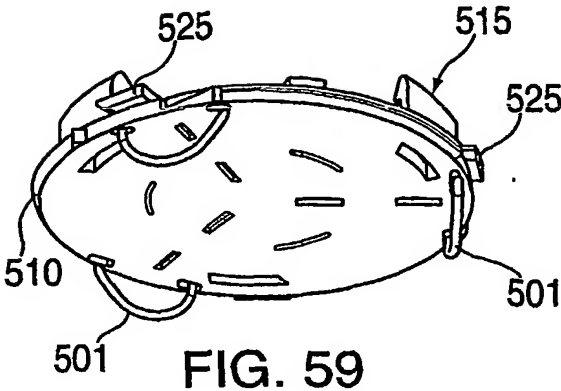


FIG. 57

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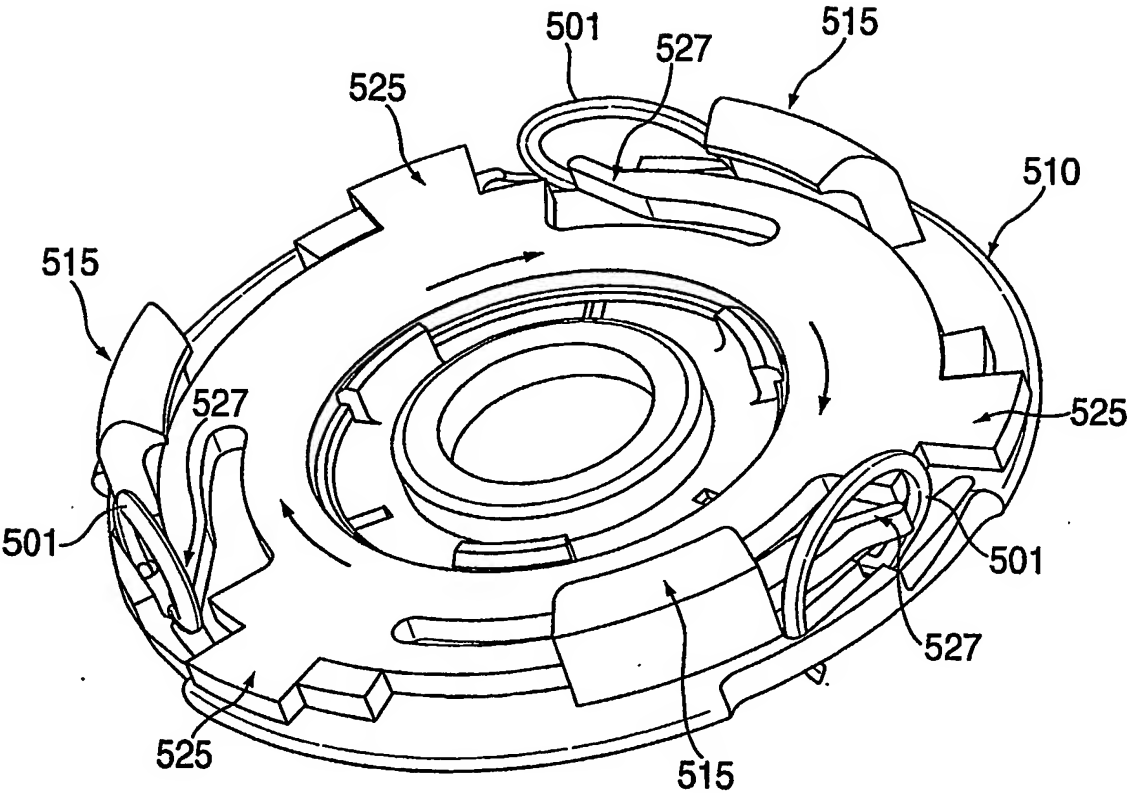


FIG. 58

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